



Thursday, December 19, 2019

Ty Woodworth
Great Western Operating Company, LLC
4093 Specialty Place, Unit B
Longmont, CO 80504

Re: ALS Workorder: 1912075
Project Name: Wilson IC 03-222HN BH
Project Number:

Dear Mr. Woodworth:

Two water samples were received from Great Western Operating Company, LLC, on 12/5/2019. The samples were scheduled for the following analyses:

- Dissolved Gasses
- GC/MS Volatiles
- Inorganics
- Metals
- Total Extractable Petroleum Hydrocarbons (Diesel)
- Total Volatile Petroleum Hydrocarbons (Gasoline)

The results for these analyses are contained in the enclosed reports.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, ALS certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental.

Thank you for your confidence in ALS Environmental. Should you have any questions, please call.

Sincerely,

ALS Environmental
Katie M. O'Brien
Project Manager

ALS Environmental – Fort Collins is accredited by the following accreditation bodies for various testing scopes in accordance with requirements of each accreditation body. All testing is performed under the laboratory management system, which is maintained to meet these requirement and regulations. Please contact the laboratory or accreditation body for the current scope testing parameters.

ALS Environmental – Fort Collins	
Accreditation Body	License or Certification Number
AIHA	214884
Alaska (AK)	UST-086
Alaska (AK)	CO01099
Arizona (AZ)	AZ0742
California (CA)	06251CA
Colorado (CO)	CO01099
Florida (FL)	E87914
Idaho (ID)	CO01099
Kansas (KS)	E-10381
Kentucky (KY)	90137
PJ-LA (DoD ELAP/ISO 170250)	95377
Louisiana (LA)	05057
Maryland (MD)	285
Missouri (MO)	175
Nebraska(NE)	NE-OS-24-13
Nevada (NV)	CO000782008A
New York (NY)	12036
North Dakota (ND)	R-057
Oklahoma (OK)	1301
Pennsylvania (PA)	68-03116
Tennessee (TN)	2976
Texas (TX)	T104704241
Utah (UT)	CO01099
Washington (WA)	C1280



1912075

GC/MS Volatiles:

The sample was analyzed using GC/MS following the current revision of SOP 525 based on SW-846 Method 8260C.

All acceptance criteria were met.

Dissolved Gasses:

The sample was prepared and analyzed according to method RSK-175 procedures and the current revision of SOP 449.

All acceptance criteria were met.

GRO:

The sample was analyzed following the current revision of SOP 425 generally based on SW-846 Methods 8000C and 8015D. TVPH is a multicomponent mixture and is quantitated by summing the entire carbon range, rather than individual peaks. The carbon range integrated in this test extends from C6 to C10.

All acceptance criteria were met.

DRO:

The sample was analyzed following the current revision of SOP 406 generally based on SW-846 Methods 8000C and 8015D. TEPH is a multicomponent mixture and is quantitated by summing the entire carbon range, rather than individual peaks. The carbon range integrated in this test extends from C10 to C28.

All acceptance criteria were met.

Metals:

The samples were analyzed following Methods for the Determination of Metals in Environmental Samples – Supplement 1 procedures. Analysis by ICPMS followed method 200.8 and the current revision of SOP 827.

Sample 1912075-2 was to be analyzed for dissolved metals. The sample was filtered through a 0.45 micron filter and preserved with nitric acid to a pH less than two prior to analysis.

All acceptance criteria were met.



Inorganics:

The sample was analyzed following EMSL and Standard Method procedures for the current revisions of the following SOPs and methods:

<u>Analyte</u>	<u>Method</u>	<u>SOP #</u>
Alkalinity	SM2320B	1106
Bicarbonate	SM2320B	1106
Carbonate	SM2320B	1106
TDS	SM2540C	1101
Chloride	300.0 Revision 2.1	1113
Sulfate	300.0 Revision 2.1	1113

All acceptance criteria were met.

ALS -- Fort Collins

Sample Number(s) Cross-Reference Table

OrderNum: 1912075

Client Name: Great Western Operating Company, LLC

Client Project Name: Wilson IC 03-222HN BH

Client Project Number:

Client PO Number:

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
03-222HN A through E, and G	1912075-1		WATER	04-Dec-19	14:00
03-222HN F	1912075-2		WATER	04-Dec-19	14:00



ALS Environmental

225 Commerce Drive, Fort Collins, Colorado 80524
 TF: (800) 443-1511 PH: (970) 490-1511 FX: (970) 490-1522

Chain-of-Custody

Turnaround time for samples received after 2 p.m. will be calculated beginning from the next business day.
 Turnaround time for samples received Saturday will be calculated beginning from the next business day.

ALS WORKORDER #
 1912075

PROJECT NAME	PROJECT No.	TURNAROUND TIME	SAMPLER	PAGE	of													
Wilson FC 03-222HN BH																		
COMPANY NAME	EDD FORMAT	PARAMETER/METHOD REQUEST FOR ANALYSIS																
SEND REPORT TO	PURCHASE ORDER	A	Dissolved Gases															
ADDRESS	BILL TO COMPANY	B	PTFX															
CITY/STATE/ZIP	INVOICE ATTN TO	C	DRO															
PHONE	ADDRESS	D	GRC															
FAX	CITY/STATE/ZIP	E	Anions, Alks, TDS															
E-MAIL	PHONE	F	DS Metals															
	FAX	G	TR Metals															
	E-MAIL	H																
		I																
		J																
LAB ID	FIELD ID	MATRIX	SAMPLE DATE	SAMPLE TIME	# OF BOTTLES	PRESERVATIVE	QC	A	B	C	D	E	F	G	H	I	J	SEE NOTES SECTION
1	03-222HN A	W	12/4	14:00	3	—		X										
	03-222HN B				3	HCL			X									
	03-222HN C				3	HCL				X								
	03-222HN D				3	HCL					X							
	03-222HN E				1	—						X						
2	03-222HN F				1	—							X					
1	03-222HN G				1	HNO3								X				

*Time Zone (Circle): EST CST MST PST Matrix: O = oil S = soil NS = non-soil solid W = water L = liquid E = extract F = filter

RELINQUISHED BY	SIGNATURE	DATE	TIME
Max Trehus	<i>[Signature]</i>	12/5/19	9:35
Tyler Messner	<i>[Signature]</i>	12/26/19	09:35
RECEIVED BY			
RECEIVED BY			
RECEIVED BY			
RECEIVED BY			
RECEIVED BY			

Form 2029

REPORT LEVEL / QC REQUIRED

Summary (Standard QC)

LEVEL II (Standard QC)

LEVEL III (Std QC + forms)

LEVEL IV (Std QC + forms + raw)

Facility ID: A52187

6 of 18

1-HCl 2-HNO3 3-H2SO4 4-NaOH 5-NaOH/ZnAcetate 6-NaHSO4 7-4°C 8-Other

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SAMPLE SUMMARY REPORT

Client: Great Western Operating Company, LLC

Date: 19-Dec-19

Project: Wilson IC 03-222HN BH

Work Order: 1912075

Sample ID: 03-222HN A through E, and G

Lab ID: 1912075-1

Legal Location:

Matrix: WATER

Collection Date: 12/4/2019 14:00

Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Alkalinity as Calcium Carbonate			SM2320B			Prep Date: 12/10/2019 PrepBy: LMC
BICARBONATE AS CaCO3	71		20	MG/L	1	12/10/2019
CARBONATE AS CaCO3	280		20	MG/L	1	12/10/2019
TOTAL ALKALINITY AS CaCO3	350		20	MG/L	1	12/10/2019
Diesel Range Organics			SW8015M			Prep Date: 12/12/2019 PrepBy: LML
Diesel Range Organics	8.4	L	0.51	MG/L	1	12/12/2019 14:24
Surr: O-TERPHENYL	88		63-126	%REC	1	12/12/2019 14:24
Dissolved Gasses			RSK175			Prep Date: 12/11/2019 PrepBy: LML
METHANE	750		1	UG/L	1	12/11/2019 13:03
ETHANE	160		2	UG/L	1	12/11/2019 13:03
PROPANE	52		1	UG/L	1	12/11/2019 13:03
Gasoline Range Organics			SW8015			Prep Date: 12/10/2019 PrepBy: LML
GASOLINE RANGE ORGANICS	3	G	1	MG/L	10	12/10/2019 09:10
Surr: 2,3,4-TRIFLUOROTOLUENE	95		74-129	%REC	10	12/10/2019 09:10
GC/MS Volatiles			SW8260_25			Prep Date: 12/5/2019 PrepBy: JXK
BENZENE	87		25	UG/L	25	12/5/2019 15:47
TOLUENE	230		25	UG/L	25	12/5/2019 15:47
ETHYLBENZENE	65		25	UG/L	25	12/5/2019 15:47
M+P-XYLENE	220		25	UG/L	25	12/5/2019 15:47
O-XYLENE	120		25	UG/L	25	12/5/2019 15:47
TOTAL XYLENES	340		1	UG/L	1	12/5/2019 15:47
Surr: 4-BROMOFLUOROBENZENE	98		85-115	%REC	25	12/5/2019 15:47
Surr: DIBROMOFLUOROMETHANE	102		84-118	%REC	25	12/5/2019 15:47
Surr: TOLUENE-D8	99		85-115	%REC	25	12/5/2019 15:47
Ion Chromatography			EPA300.0			Prep Date: 12/6/2019 PrepBy: KJS
CHLORIDE	4800		100	MG/L	500	12/6/2019 14:15
SULFATE	790		100	MG/L	100	12/6/2019 14:01
Total Recoverable Metals by 200.8			EPA200.8			Prep Date: 12/12/2019 PrepBy: JML
CALCIUM	2500000		1000	UG/L	10	12/16/2019 14:49
POTASSIUM	670000		1000	UG/L	10	12/16/2019 14:49
MAGNESIUM	ND		100	UG/L	10	12/16/2019 14:49
SODIUM	540000		1000	UG/L	10	12/16/2019 14:49
Total Dissolved Solids			SM2540C			Prep Date: 12/9/2019 PrepBy: LMC
TOTAL DISSOLVED SOLIDS	12000		400	MG/L	1	12/10/2019

Client: Great Western Operating Company, LLC

Date: 19-Dec-19

Project: Wilson IC 03-222HN BH

Work Order: 1912075

Sample ID: 03-222HN F

Lab ID: 1912075-2

Legal Location:

Matrix: WATER

Collection Date: 12/4/2019 14:00

Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Dissolved Metals by 200.8			EPA200.8		Prep Date: 12/12/2019	PrepBy: JML
CALCIUM	2600000		1000	UG/L	10	12/16/2019 14:52
POTASSIUM	680000		1000	UG/L	10	12/16/2019 14:52
MAGNESIUM	ND		100	UG/L	10	12/16/2019 14:52
SODIUM	550000		1000	UG/L	10	12/16/2019 14:52

Client: Great Western Operating Company, LLC
Project: Wilson IC 03-222HN BH
Sample ID: 03-222HN F
Legal Location:
Collection Date: 12/4/2019 14:00

Date: 19-Dec-19
Work Order: 1912075
Lab ID: 1912075-2
Matrix: WATER
Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
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Explanation of Qualifiers

Radiochemistry:

- "Report Limit" is the MDC
- U or ND - Result is less than the sample specific MDC.
- Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.
- Y2 - Chemical Yield outside default limits.
- W - DER is greater than Warning Limit of 1.42
- * - Aliquot Basis is 'As Received' while the Report Basis is 'Dry Weight'.
- # - Aliquot Basis is 'Dry Weight' while the Report Basis is 'As Received'.
- G - Sample density differs by more than 15% of LCS density.
- D - DER is greater than Control Limit
- M - Requested MDC not met.
- M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
- L - LCS Recovery below lower control limit.
- H - LCS Recovery above upper control limit.
- P - LCS, Matrix Spike Recovery within control limits.
- N - Matrix Spike Recovery outside control limits
- NC - Not Calculated for duplicate results less than 5 times MDC
- B - Analyte concentration greater than MDC.
- B3 - Analyte concentration greater than MDC but less than Requested MDC.

Inorganics:

- B - Result is less than the requested reporting limit but greater than the instrument method detection limit (MDL).
- U or ND - Indicates that the compound was analyzed for but not detected.
- E - The reported value is estimated because of the presence of interference. An explanatory note may be included in the narrative.
- M - Duplicate injection precision was not met.
- N - Spiked sample recovery not within control limits. A post spike is analyzed for all ICP analyses when the matrix spike and or spike duplicate fail and the native sample concentration is less than four times the spike added concentration.
- Z - Spiked recovery not within control limits. An explanatory note may be included in the narrative.
- * - Duplicate analysis (relative percent difference) not within control limits.
- S - SAR value is estimated as one or more analytes used in the calculation were not detected above the detection limit.

Organics:

- U or ND - Indicates that the compound was analyzed for but not detected.
- B - Analyte is detected in the associated method blank as well as in the sample. It indicates probable blank contamination and warns the data user.
- E - Analyte concentration exceeds the upper level of the calibration range.
- J - Estimated value. The result is less than the reporting limit but greater than the instrument method detection limit (MDL).
- A - A tentatively identified compound is a suspected aldol-condensation product.
- X - The analyte was diluted below an accurate quantitation level.
- * - The spike recovery is equal to or outside the control criteria used.
- + - The relative percent difference (RPD) equals or exceeds the control criteria.
- G - A pattern resembling gasoline was detected in this sample.
- D - A pattern resembling diesel was detected in this sample.
- M - A pattern resembling motor oil was detected in this sample.
- C - A pattern resembling crude oil was detected in this sample.
- 4 - A pattern resembling JP-4 was detected in this sample.
- 5 - A pattern resembling JP-5 was detected in this sample.
- H - Indicates that the fuel pattern was in the heavier end of the retention time window for the analyte of interest.
- L - Indicates that the fuel pattern was in the lighter end of the retention time window for the analyte of interest.
- Z - This flag indicates that a significant fraction of the reported result did not resemble the patterns of any of the following petroleum hydrocarbon products:
 - gasoline
 - JP-8
 - diesel
 - mineral spirits
 - motor oil
 - Stoddard solvent
 - bunker C

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Date: 12/19/2019 4:19

Client: Great Western Operating Company, LLC

QC BATCH REPORT

Work Order: 1912075

Project: Wilson IC 03-222HN BH

Batch ID: **HC191210-61-1**

Instrument ID **FUELS-1**

Method: **SW8015**

LCS Sample ID: **HC191210-61** Units: **MG/L** Analysis Date: **12/10/2019 08:07**

Client ID: Run ID: **HC191210-6A** Prep Date: **12/10/2019** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
GASOLINE RANGE ORGANICS	0.487	0.1	0.5		97	79-118				20	
Surr: 2,3,4-TRIFLUOROTOLUENE	0.0948		0.1		95	74-129					

LCSD Sample ID: **HC191210-61** Units: **MG/L** Analysis Date: **12/10/2019 15:35**

Client ID: Run ID: **HC191210-6A** Prep Date: **12/10/2019** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
GASOLINE RANGE ORGANICS	0.447	0.1	0.5		89	79-118		0.487	9	20	
Surr: 2,3,4-TRIFLUOROTOLUENE	0.0932		0.1		93	74-129			2		

MB Sample ID: **HC191210-61** Units: **MG/L** Analysis Date: **12/10/2019 08:28**

Client ID: Run ID: **HC191210-6A** Prep Date: **12/10/2019** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
GASOLINE RANGE ORGANICS	ND	0.1									
Surr: 2,3,4-TRIFLUOROTOLUENE	0.0921				92	74-129					

The following samples were analyzed in this batch:

Client: Great Western Operating Company, LLC
 Work Order: 1912075
 Project: Wilson IC 03-222HN BH

QC BATCH REPORT

Batch ID: **HC191211-91-2** Instrument ID **MEE-1** Method: **RSK175**

LCS		Sample ID: HC191211-91			Units: UG/L		Analysis Date: 12/11/2019 12:50				
Client ID:		Run ID: HC191211-9A			Prep Date: 12/11/2019		DF: 1				
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
METHANE	135	1	142		95	80-120				25	
ETHANE	221	2	267		83	80-120				25	
PROPANE	338	1	391		86	80-120				25	

LCSD		Sample ID: HC191211-91			Units: UG/L		Analysis Date: 12/11/2019 13:43				
Client ID:		Run ID: HC191211-9A			Prep Date: 12/11/2019		DF: 1				
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
METHANE	133	1	142		94	80-120		135	1	25	
ETHANE	219	2	267		82	80-120		221	1	25	
PROPANE	332	1	391		85	80-120		338	2	25	

MB		Sample ID: HC191211-91			Units: UG/L		Analysis Date: 12/11/2019 12:59					
Client ID:		Run ID: HC191211-9A			Prep Date: 12/11/2019		DF: 1					
Analyte	Result	ReportLimit										Qual
METHANE	ND	1										
ETHANE	ND	2										
PROPANE	ND	1										

The following samples were analyzed in this batch:

Client: Great Western Operating Company, LLC
 Work Order: 1912075
 Project: Wilson IC 03-222HN BH

QC BATCH REPORT

Batch ID: **HC191212-82-1** Instrument ID **FUELS-1** Method: **SW8015M**

LCS		Sample ID: HC191212-82			Units: MG/L		Analysis Date: 12/12/2019 13:41				
Client ID:		Run ID: HC191212-8A			Prep Date: 12/12/2019		DF: 1				
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
Diesel Range Organics	7.8	0.533	8.33		94	36-150				20	
Surr: O-TERPHENYL	1.44		1.67		86	63-126					

LCSD		Sample ID: HC191212-82			Units: MG/L		Analysis Date: 12/12/2019 14:02				
Client ID:		Run ID: HC191212-8A			Prep Date: 12/12/2019		DF: 1				
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
Diesel Range Organics	7.81	0.533	8.33		94	36-150		7.8	0	20	
Surr: O-TERPHENYL	1.43		1.67		86	63-126			0		

MB		Sample ID: HC191212-82			Units: MG/L		Analysis Date: 12/12/2019 13:19					
Client ID:		Run ID: HC191212-8A			Prep Date: 12/12/2019		DF: 1					
Analyte	Result	ReportLimit										Qual
Diesel Range Organics	ND	0.53										
Surr: O-TERPHENYL	1.44				86	63-126						

The following samples were analyzed in this batch:

Client: Great Western Operating Company, LLC
 Work Order: 1912075
 Project: Wilson IC 03-222HN BH

QC BATCH REPORT

Batch ID: **IP191212-3-6** Instrument ID **ICPMS2** Method: **EPA200.8**

LCS		Sample ID: IM191212-3			Units: UG/L		Analysis Date: 12/16/2019 14:35				
Client ID:		Run ID: IM191216-10A10			Prep Date: 12/12/2019		DF: 10				
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
CALCIUM	10200	1000	10000		102	85-115				20	
MAGNESIUM	9230	100	10000		92	85-115				20	
POTASSIUM	4710	1000	5000		94	85-115				20	
SODIUM	8860	1000	10000		89	85-115				20	

LCSD		Sample ID: IM191212-3			Units: UG/L		Analysis Date: 12/16/2019 14:38				
Client ID:		Run ID: IM191216-10A10			Prep Date: 12/12/2019		DF: 10				
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
CALCIUM	10200	1000	10000		102	85-115		10200	0	20	
MAGNESIUM	9080	100	10000		91	85-115		9230	2	20	
POTASSIUM	4670	1000	5000		93	85-115		4710	1	20	
SODIUM	8780	1000	10000		88	85-115		8860	1	20	

MB		Sample ID: FP191209-3			Units: UG/L		Analysis Date: 12/16/2019 14:29				
Client ID:		Run ID: IM191216-10A10			Prep Date: 12/12/2019		DF: 10				
Analyte	Result	ReportLimit	Qual								
CALCIUM	ND	1000									
MAGNESIUM	ND	100									
POTASSIUM	ND	1000									
SODIUM	ND	1000									

MB		Sample ID: IP191212-3			Units: UG/L		Analysis Date: 12/16/2019 14:32				
Client ID:		Run ID: IM191216-10A10			Prep Date: 12/12/2019		DF: 10				
Analyte	Result	ReportLimit	Qual								
CALCIUM	ND	1000									
MAGNESIUM	ND	100									
POTASSIUM	ND	1000									
SODIUM	ND	1000									

The following samples were analyzed in this batch:

1912075-1	1912075-2
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Client: Great Western Operating Company, LLC
 Work Order: 1912075
 Project: Wilson IC 03-222HN BH

QC BATCH REPORT

Batch ID: VL191205-3-1 Instrument ID: HPV3 Method: SW8260_25

LCS		Sample ID: VL191205-3			Units: %REC		Analysis Date: 12/5/2019 09:50				
Client ID:		Run ID: VL191205-3A			Prep Date: 12/5/2019		DF: 1				
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
Surr: 4-BROMOFLUOROBENZENE	25.1		25		100	85-115					
Surr: DIBROMOFLUOROMETHANE	25.2		25		101	84-118					
Surr: TOLUENE-D8	25.1		25		100	85-115					
BENZENE	9.76	1	10		98	83-117				20	
TOLUENE	9.84	1	10		98	82-113				20	
ETHYLBENZENE	9.93	1	10		99	81-113				20	
M+P-XYLENE	19.8	1	20		99	82-115				20	
O-XYLENE	9.85	1	10		98	81-115				20	

LCSD		Sample ID: VL191205-3			Units: %REC		Analysis Date: 12/5/2019 10:11				
Client ID:		Run ID: VL191205-3A			Prep Date: 12/5/2019		DF: 1				
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
Surr: 4-BROMOFLUOROBENZENE	25.1		25		101	85-115			0		
Surr: DIBROMOFLUOROMETHANE	25.1		25		100	84-118			0		
Surr: TOLUENE-D8	24.6		25		98	85-115			2		
BENZENE	9.85	1	10		99	83-117		9.76	1	20	
TOLUENE	9.74	1	10		97	82-113		9.84	1	20	
ETHYLBENZENE	9.87	1	10		99	81-113		9.93	1	20	
M+P-XYLENE	19.9	1	20		100	82-115		19.8	1	20	
O-XYLENE	9.95	1	10		99	81-115		9.85	1	20	

MB		Sample ID: VL191205-3			Units: %REC		Analysis Date: 12/5/2019 10:56				
Client ID:		Run ID: VL191205-3A			Prep Date: 12/5/2019		DF: 1				
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
Surr: 4-BROMOFLUOROBENZENE	25				100	85-115					
Surr: DIBROMOFLUOROMETHANE	25				100	84-118					
Surr: TOLUENE-D8	25.1				101	85-115					
BENZENE	ND	1									
TOLUENE	ND	1									
ETHYLBENZENE	ND	1									
M+P-XYLENE	ND	1									
O-XYLENE	ND	1									
TOTAL XYLENES	ND	1									

The following samples were analyzed in this batch:

Client: Great Western Operating Company, LLC
Work Order: 1912075
Project: Wilson IC 03-222HN BH

QC BATCH REPORT

Batch ID: **AK191210-1-1** Instrument ID **NONE** Method: **SM2320B**

LCS	Sample ID: AK191210-1					Units: MG/L	Analysis Date: 12/10/2019				
Client ID:		Run ID: AK191210-1A1				Prep Date: 12/10/2019			DF: 1		
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
TOTAL ALKALINITY AS CaCO3	107	5	100		107	85-115				15	

LCSD	Sample ID: AK191210-1					Units: MG/L	Analysis Date: 12/10/2019				
Client ID:		Run ID: AK191210-1A1				Prep Date: 12/10/2019			DF: 1		
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
TOTAL ALKALINITY AS CaCO3	107	5	100		107	85-115		107	0	15	

MB	Sample ID: AK191210-1					Units: MG/L	Analysis Date: 12/10/2019					
Client ID:		Run ID: AK191210-1A1				Prep Date: 12/10/2019			DF: 1			
Analyte	Result	ReportLimit										Qual
BICARBONATE AS CaCO3	ND	5										
CARBONATE AS CaCO3	ND	5										
TOTAL ALKALINITY AS CaCO3	ND	5										

The following samples were analyzed in this batch: 1912075-1

Client: Great Western Operating Company, LLC
 Work Order: 1912075
 Project: Wilson IC 03-222HN BH

QC BATCH REPORT

Batch ID: **IC191206-1-1** Instrument ID **IC3** Method: **EPA300.0**

LCS		Sample ID: IC191206-1			Units: MG/L		Analysis Date: 12/6/2019 12:42				
Client ID:		Run ID: IC191206-1A1					Prep Date: 12/6/2019		DF: 1		
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
CHLORIDE	10.1	0.2	10		101	90-110				15	
SULFATE	50.3	1	50		101	90-110				15	

LCSD		Sample ID: IC191206-1			Units: MG/L		Analysis Date: 12/6/2019 15:20				
Client ID:		Run ID: IC191206-1A1					Prep Date: 12/6/2019		DF: 1		
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
CHLORIDE	9.98	0.2	10		100	90-110		10.1	1	15	
SULFATE	50.1	1	50		100	90-110		50.3	0	15	

MB		Sample ID: IC191206-1			Units: MG/L		Analysis Date: 12/6/2019 12:55					
Client ID:		Run ID: IC191206-1A1					Prep Date: 12/6/2019		DF: 1			
Analyte	Result	ReportLimit										Qual
CHLORIDE	ND	0.2										
SULFATE	ND	1										

The following samples were analyzed in this batch:

Client: Great Western Operating Company, LLC
Work Order: 1912075
Project: Wilson IC 03-222HN BH

QC BATCH REPORT

Batch ID: **TD191209-1-1** Instrument ID **Balance** Method: **SM2540C**

LCS	Sample ID: TD191209-1					Units: MG/L	Analysis Date: 12/10/2019				
Client ID:		Run ID: TD191210-1A1					Prep Date: 12/9/2019		DF: 1		
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
TOTAL DISSOLVED SOLIDS	389	20	400		97	85-115				14	

MB	Sample ID: TD191209-1					Units: MG/L	Analysis Date: 12/10/2019					
Client ID:		Run ID: TD191210-1A1					Prep Date: 12/9/2019		DF: 1			
Analyte	Result	ReportLimit										Qual
TOTAL DISSOLVED SOLIDS	ND	20										

The following samples were analyzed in this batch: